What's Happening on the Very Low Frequencies?

24 Hour Service of News You Can Use

BY ROBERT S. CAPON, WA3ULH

Are you a news hound? Do you get a thrill out of monitoring international news broadcasts? Is your television locked onto CNN's Headline News? If so, what I have to tell you may be surprising because there is a remarkable news service on Very Low Frequency (VLF) that's one of the best kept secrets in radio.

The news service is generically known as radio reading for the blind. Essentially, a network of national and local providers read a wide range of publications throughout the day. These publications range from *The Wall Street Journal*, *The New York Times*, *People*, *Newsweek*, *Garbage*, *Cat Fancy* and your local newspaper! These services were created to benefit the blind, as well as other people, including the elderly and news hounds.

Here's how it works. National sources of radio reading materials, like the In Touch Network, broadcast a 24-hour reading service to radio stations via satellite. Many radio stations simply re-broadcast the service, while other stations augment the national news service with local newspaper reading. That is, they "turn the network on and off" and fill in the gaps with local programming.

Then these local radio reading services re-broadcast the program on the sub-carrier of FM radio stations, usually public radio stations. You can't hear the sub-carrier signal on your FM radio, but it's there. Here are three techniques to unlock the sub-carrier signal from the main FM signal, so that you can tune-in to this invaluable service.

What else is on VLF?

The Very Low Frequency band is generally considered to be the broadcast band below 500 KHz. The following table summarizes what's on VLF:

Frequency	Service
10-160 KHz	Long range navigation, radioteletype and other signals
160-190 KHz	License-free band for 1 watt experimental stations
150-280 KHz	High power European broadcasters
190-410 KHz	Radiobeacons, some with AM weather broadcasts
410-500 KHz	Coastal ships

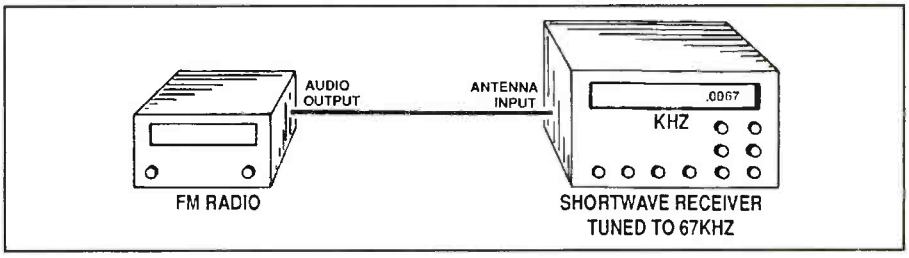

Diagram 1

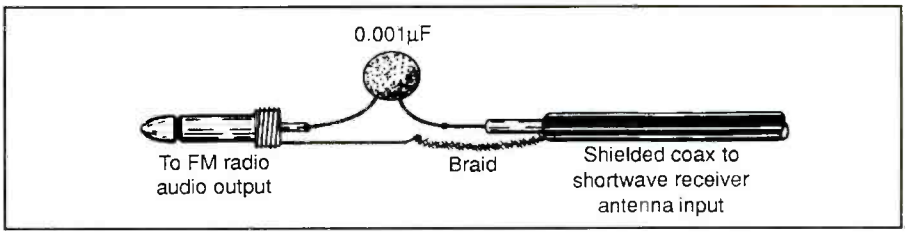

Diagram 2

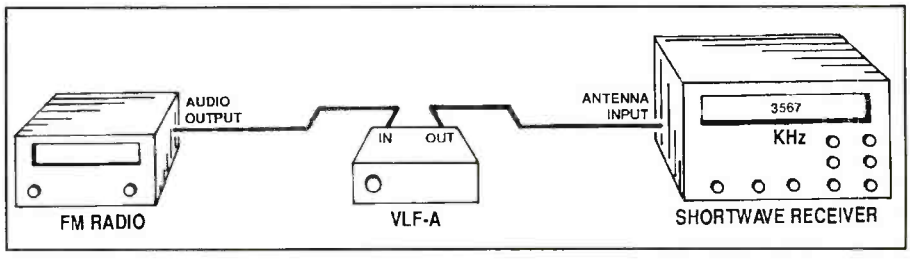

Diagram 3

If you happen to live near a large AM broadcast station, you may hear harmonics of these broadcasts on the VLF band.

Three Ways to Access Radio Reading Services on VLF

Sub-carrier signals operate at either 67 or 92 kHz, and are a component of the FM broadcaster's signal. The key to the three methods described below is separating this sub-carrier signal from the main signal.

Method 1. Take a moment to look at your world band base station receiver to determine if the radio can tune as low as 67 kHz or 92 kHz in the FM mode. Most receivers can only tune to 100 KHz, but a few like the ICOM R-72 and the Yaesu FRG-100 can receive on 30 KHz and 50 kHz respectively. If your radio can tune to 67 kHz/92 kHz, you're in luck. If not, you might want to skip to method 2.

To hear the signal, simply build a shielded patch cable to connect the audio output (or headphone, or earphone) jack of a portable FM radio to the antenna input of your base receiver (Diagram 1). Most FM radio audio output jacks use a 1/8-inch mini-plug. Most antenna input jacks use either PL-259 or a phono plug. You might have these connectors and a scrap of shielded coax in your junk box. If not, the parts should be available from your local Radio Shack for less than $5.

While you are building your cable, solder a .001 µF ceramic disk capacitor (such as a Radio Shack Catalog # 272-126) in series with the center conductor of the cable (Diagram 2). This will filter interference from the main FM signal from the sub-carrier signal. (If you look through your parts box to find the capacitor, the capacitor code for .001 µF is "102".)

Now, connect the FM radio audio output to your world band radio antenna input,

tune your world band radio to 67 KHz and set the mode to FM, turn on your FM radio, and tune around until you hear your local reading service. If you cannot find the signal, at 67 KHz, try 92 KHz. If you still cannot find the signal, call your local public radio station, and ask for the frequency of the local radio reading service. Most metropolitan markets have the service.

When you find the signal, increase your FM radio volume control until you just begin to receive interference from the main FM signal, then back off on the volume control slightly. Then use the volume control on your world band receiver to adjust the reading signal to a comfortable volume.

Incidentally, if you are in the market for a world band receiver, you might want to consider its VLF frequency range before you make a purchase decision.

WARNING. If you are using an amateur radio transceiver instead of a world band base receiver, be sure not to accidentally transmit a signal while your favorite FM radio is connected to the antenna input. You will damage your FM radio, which was not designed to be a 100 watt dummy load!

Method 2. If your world band receiver is like most radios, it will not tune below 100 KHz. But there is a product called a "VLF Converter" that will enable you to receive VLF signals on your world band radio.

The VLF Converter works this way. The converter receives VLF signals in the frequency range of 10-500 KHz, and converts the signal to a frequency range of 3510-4000 KHz that you can receive on your world band radio (Diagram 3).

To use the VLF Converter, simply use the patch cable described above (filtered with the .001 µF capacitor) to connect the audio output of your FM radio to the input jack of the VLF Converter. Then use a standard coaxial cable to connect the VLF Converter output to the antenna input of your world band receiver.

This time, tune your world band radio to 3567 KHz (or 3592 KHz) and set the mode to FM, turn on your FM radio and the VLF converter, and tune around until you hear your local reading service. When you find the signal, adjust the FM radio volume control and the volume control on your world band radio as above.

Method 3. Another easy way to tune in to your local radio reading service is to purchase a specially designed radio which is able to both operate as an FM radio and to separate the sub-carrier signal from the main signal. A supplier of these radios is listed at the conclusion of this article.

The benefit of this method is simplicity, and these radios cost about the same as the VLF Converter. However, the benefit of using a VLF Converter, is that you can also use the Converter to tune in the other services and stations on VLF. As a radio enthusiast, I prefer having this added capability.

However, if you do not possess a tabletop world band radio that can tune 3567 KHz in the FM mode, purchasing one of these specially designed FM radios might be the way to go.

And remember, if you're in the market for a world band radio, be sure to check the frequency range to see if you can monitor the interesting world of VLF.

Source for VLF-A Converter:
Palomar Engineers
1924-F West Mission Road
Escondido, CA 92029

MFJ Enterprises
Box 494
Mississippi State, MS 39762

LF Engineering Company
17 Jeffry Road
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